

FURTHER RECORDS AND DESCRIPTIONS OF AMERICAN MILLIPEDS

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In this paper are given some records and descriptions of millipeds pertaining to several widely separated families as represented in the cabinets of the Chicago Natural History Museum. Other families have been reported upon elsewhere. This material has been studied through the courtesy of Dr. Karl P. Schmidt, director of that museum. Most of this material was collected by Dr. Schmidt himself and Henry S. Dybas, and much appreciation is due these men for their interest in the group.

Order CHORDEUMIDA Family CLEIDOGONIDAE

CLEIDOGONA **MANDELI** Chamberlin, new species

Dorsum black each side of a median dorsal pale line; within the black area on each metatergite there are on each side two small light dots and a larger light spot adjacent to a black spot on upper part of the side, these larger light spots more or less confluent into a longitudinal stripe; the sides below the black spots light orange in color; head dusky, with antennae black or nearly so; legs dusky yellow, with the tarsus darkest, being black or nearly so.

Head clothed in front with rather numerous short setae, these sparse above.

Eyes subsemicircular in outline, the caudal side being truncate and the anterior convex; ocelli arranged in 5 or 6 series, e.g., 6, 6, 5, 4, 3, 1.

Ninth legs of male as represented in fig. 4. Coxae of tenth and eleventh legs as shown in figs. 5 and 6.

The gonopods of the male as represented in fig. 7.

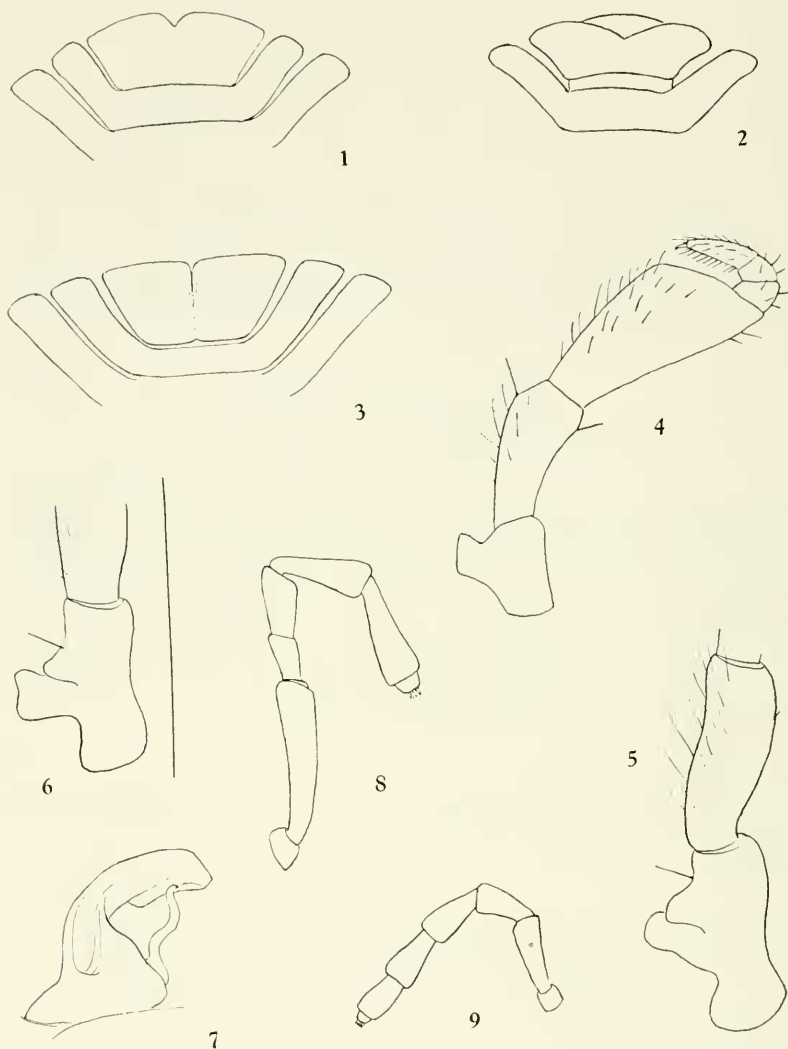
Length, 10-12 mm.

LOCALITY: Guatemala: Volcan Tajumulco. The male holotype and two females were collected at an elevation of between 8,000 and 12,000 feet "under logs and bark," by K. P. Schmidt, on Feb. 13, 1934. (Leon Mandel Expedition.)

CLEIDOGONA **PUNCTIFER** Chamberlin, new species

A larger species than either of the other two here named.

The dorsum is dark brown or nearly black, without a median



EXPLANATION OF FIGURES

I

- Fig. 1. *Platydesmus crucis* n. sp. Anterior end, dorsal view.
 Fig. 2. *Platydesmus excisus* n. sp. Anterior end, dorsal view.
 Fig. 3. *Platydesmus perditus* n. sp. Anterior end, dorsal view.
 Fig. 4. *Cleidogona mandeli* n. sp. Ninth leg of male.
 Fig. 5. The same. Basal portion of tenth leg of male.
 Fig. 6. The same. Basal portion of eleventh leg of male.
 Fig. 7. The same Gonopod of male (same scale as for figs 4-6.)
 Fig. 8. *Prostemmiulus atypus* n. sp. Antenna.
 Fig. 9. *Prostemmiulus obscurus* n. sp. Antenna.

dorsal light line or stripe and with the dark color extending down on each side to the middle of the latter; on each side of each metazonite three small light dots about the bases of the setae and between the median and ventral of these a light area marked with a network of dark lines; lower part of sides from light to dull yellow; head dusky over the vertex, light in front and below; antennae black; legs dusky over yellow.

Eyes with ocelli arranged thus: 7, 6, 5, 4, 3, 1.

Length, 18 to 21 mm.

LOCALITY: Guatemala: Chichivac. Three females taken by Dr. Schmidt, Feb. 4-7, 1934. (Mandel Expedition).

CLEIDOGONA TAJUMULCO Chamberlin, new species

A larger, more robust, form than *mandeli* but smaller than *punctifer*.

The black area on each side of the middorsal line on each metatergite encloses two small light dots; the sides entirely light colored, without a series of black dots over the glands, these areas only slightly darkened; the upper part of sides pale orange, the lower part and the venter clear yellow; head yellow on the sides and lower part of face, more orange above; antennae dusky except the last two articles which, in the type, are yellow; legs yellow.

Penult article of antennae only slightly thickened, clavate. Ocelli in six series, these, counting from above downward, being as follows: 7, 6, 5, 3, 2, 1. Length, about 15 mm.

LOCALITY: Guatemala: Volcan Tajumulco. One female taken by K. P. Schmidt, Feb. 13, 1934. (Mandel Expedition).

Family LYSIOPETALIDAE

SPIROSTREPHON LACTARIUM (Say)

Julus lactarius Say, 1821, Journ. Acad. Nat. Sci. Phila., Vol. 2, p. 104.
Spirostrephon lactarium Brandt, 1840, Recueil, p. 90.

LOCALITY: Tennessee: Great Smokey Mt. Nat. Park, Gatlinburg. Two specimens taken June 6-13, 1842, by H. Dybas.

Order STEMMIULIDA

Family STEMMIULIDAE

PROSTEMMIULUS ATYPUS Chamberlin, new species

Differing from *P. cooki* Chamb., the only other species thus far reported from Guatemala, in wholly lacking the conspicuous mid-dorsal yellow stripe and the other yellow markings of the latter

species. The general color above is bluish brown, with pale mottlings, the color grading into the yellow of the lower sides and the venter; collum and vertex of head brown mottled with paler spots, the color on the collum solid over the borders; antennae blackish, and the legs yellow.

Ocelli 2 on each side as usual, with the upper one about twice the diameter of the lower one. Antennae as shown in fig. 8.

Collum margined below and up the front as typical, with three sulci above the lower end on each side.

Differing from *cooki* in having oblique striae not only up the sides but in the middorsal area as well.

Number of segments, 51. Width, 2.4 mm.

LOCALITY: Guatemala: Escobas, opposite Point Barrios. One female taken by K. P. Schmidt, Nov. 27, 1933. (Mandel Expedition).

PROSTEMMIULUS **OBSCURUS** Chamberlin, new species

Color of dorsum and sides nearly black, some segments showing a lighter annulus about metazonites, yellow ventrally; collum with a network of blackish lines and solid black borders; vertex of head similarly areolated; a solid black band between the antenna and eye of each side and those of the other; antennae black; legs yellow.

The upper ocellus on each side much larger than the lower one as usual. Antennae with articles proportioned as shown in fig. 9.

The collum with but two striae above the margining sulcus on each side, these fine.

The series of oblique striae on the tergites extends up the side but none occur in the middorsal area.

Number of segments, 38. Width, 1.8 mm.

LOCALITY: Haiti: Kenshoff at El. 4,500 ft. One female taken by K. P. Schmidt. (Crane Field Museum Pacific Expedition).

Order JULIDA

Family JULIDAE

BRACHYIULUS PUSILLUS (Leach)

Julus pusillus Leach, 1814, Trans. Linn. Soc. London, Vol. 11, p. 379.

Julius exiguus Brandt, 1841, Recueil, p. 85.

Julius virgatus Wood, 1864, Proc. Acad. Nat. Sci. Phila., p. 14.

Julus stuxbergi Fanzaro, 1875, Atti Soc. Veneto-Trent., Vol. 4, p. 150.

Brachyiulus littoralis Verhoeff, 1898, Archiv. Naturg., p. 154, pl. 6, fig. 29.

Microbrachyiulus littoralis Jawlowski, 1939, Frag. Fauna Mus. Zool. Polonici, Vol. 4, p. 154.

LOCALITY: Illinois: Chicago. Several specimens taken by H. Dybas, Mar. 20, 1942.

DIPLOIULUS CAERULEOCINCTUS (Wood)

- Julus caeruleocinctus* Wood, 1864, Proc. Acad. Nat. Sci. Phila., p. 14.
Julus multistriatus Walsh, 1866, Practical Entomologist, pp. 34, 70.
Julus londinensis Porat Bidrag. t. yan. Sver., Dipl. p. 28.
Julus teutonicus Pocock, 1900, Ann. Mag. Nat. Hist. p. 206.
Cylindroiulus londinensis teutonicus Jackson, 1915, Lanc. and Ches. Nat., p. 433.
Diploiulus londinensis caeruleocinctus Chamberlin, 1922, Proc. Biol. Soc. Wash., Vol. 35, p. 8.

LOCALITY: Illinois: Plano, two specimens taken by H. Dybas.
New York: Rose, several taken Sept. 22, 1926, by A. C. Weed.

DIPLOIULUS HORTENSIS (Wood)

- Julus hortensis* Wood, 1864, Proc. Acad. Nat. Sci. Phila., p. 14.
Julus luscus Meinert, 1868, Naturh. Tidsskr., Vol. 8, p. 9.
Julus oweni Bollman, 1887, Entom. Amer., Vol. 2, p. 228.
Julus frisius Verhoeff, 1891, Berlin Ent. Zeitschr., Vol. 36, p. 133.
Diploiulus luscus Chamberlin, 1921, Proc. Biol. Soc. Wash., p. 81.
Diploiulus hortensis Chamberlin, 1947, Proc. Acad. Nat. Sci. Phila., Vol. 99, p. 35.

LOCALITIES: Illinois: Along the Desplaines, near River Forest; three specimens taken by A. C. Weed, Nov. 26, 1922.

California: Balboa Park, San Diego, numerous specimens taken by Morton Moran, Aug. 25, 1940, these immature.

Los Angeles, a male and female taken by Gordon Grant, Mar. 29, 1936.

JULUS MORELETI Lucas

Julus moreleti Lucas.

LOCALITIES: Bermudas: Hamilton, one taken by K. P. Schmidt on Nov. 22, 1928 (Crane Mus. Pacif. Exped.), and one taken Aug. 28, 1905 (Bean no. 1045); Seamount, Smith's Parish, one, Oct. 18, 1905 (Bean no. 628).

OPHYIULUS PILOSUS (Newport)

- Julus pilosus* Newport, 1842, Proc. Ent. Soc. London, Vol. , p. .
Julus longabo Koch, 1847, Syst. der Myr., p. 113.
Julus canaliculatus Wood, 1864, Proc. Acad. Nat. Sci. Phila., 12.
Julus laqueatus Wood, 1864, Proc. Acad. Nat. Sci. Phila., p. 13.
Julus fallax Meinert, 1868, Naturh. Tidsskr., Vol. 5, p. 15.
Ophyiulus fallax Jawlowski, 1939, Frag. faun. Mus. Zool. Polonicic, Vol. 4, p. 153.

LOCALITY: England: one taken by Henry Field in Oct., 1936.

Family NEMASOMIDAE

BLANIULUS GUTTULATUS (Bosc)

- Julus guttulatus* Bosc, 1792, Bull. d. I. Soc. Philom. Paris, p. 12.
Julus pulchellus Leach, 1814, Trans. Linn. Soc. London, Vol. 11, p. 379.
Blaniulus guttulatus Garvais, 1836, L'Institut, p. 435.

LOCALITIES: Illinois: Chicago; one taken by H. Dybas, Oct., 1940.

California: San Diego, Balboa Park; one taken by Morton Moran, Sept. 22, 1940.

NOPOIULUS MINUTUS (Brandt)

Julus minutus Brandt, 1841, Recueil, p. 89.*Julus pusillus* Say, 1821, (Preocc.), J. A. Nat. Sci., Phila., Vol. 2, p. 105.*Nemasoma minutum* Bollman, 1887, Proc. U.S.N.M., Vol 10, p. 324.*Nopoiulus minutus* Chamberlin, 1922, Proc. Biol. Soc. Wash., Vol. 35, p.9.

LOCALITY: Tennessee: Smoky Mt. Nat. Park, Gatlinburg. June 13-19, 1942, H. Dybas, collector.

Family PARAIULIDAE

ANIULUS IMPRESSUS (Say)

Julus impressus Say, 1821, Journ. Acad. Sci. Phila., Vol. 2, p. 102.*Paraiulus impressus* Bollman, 1887, Ann. N. Y. Acad. Sci., Vol. 4, p. 32.*Aniulus impressus* Chamberlin, 1941, Bull. Univ. Utah, Biol. Ser., Vol 5, No. 7, p. 3.

LOCALITIES: Illinois: Glenview, Oct. 13, 1940, W. J. Beecher coll.; Willow Springs, Cook Co., Apr. 5, 1942, several taken by H. Dybas; Olive Branch, May 8, 1907, one female by P. M. Barber.

Indiana: Dune Acres (Mineral Sps.), Porter Co., one taken by H. Dybas.

HAKIULUS DIVERSIFRONS (Wood)

Julius diversifrons Wood, 1867, Proc. Acad. Nat. Sci. Phila., Vol. 19, p. 43.*Parajulus castaneus* Bollman, 1887, Ent. Amer., Vol. 2, p. 286.

LOCALITIES: Illinois: Thatcher's Woods, River Forest, three taken Nov. 3, 1922, by A. C. Weed.

Palos Park, one by W. J. Beecher, Oct. 26, 1940.

Indiana: Dune Acres (Mineral Sps.), Porter Co., one by H. Dybas; Smith's Woods, N.E. Springville, one taken by W. J. Beecher, Oct. 19, 1952.

PARAIULUS SCHMIDTI Chamberlin, new species

Body light brown with dark, nearly black, annuli on prozonites which fade out down the sides, a median black line along dorsum inclusive of anal tergite; on the anterior tergites, including the collum, a close network of dark lines; antennae dusky brown and legs pale.

Collum strongly narrowed down the sides, but the ends narrowly rounded; margined as usual and with one short longitudinal sulcus above the lower end on each side.

Segmental sulcus distinct throughout on the ordinary segments, not excurved opposite the pore which is twice or more its diameter from the sulcus. Prozonites anteriorly with encircling striae, with a band adjacent to the sulcus crossed by fine, irregular, longitudinal striae.

Cauda acute, straight, and much surpassing the anal valves.

Gonopods as shown in figs. 20, 21.

Width, 1.5 mm.

LOCALITY: Guatemala: Volcan Tajumulco. One male and two females taken by K. P. Schmidt on Feb. 16-18, 1934.

PARAIULUS VIGANUS Chamberlin, new species

Figs. 17-18

Light brown to yellow, dorsally dusky from the presence of a network of darker lines, with the segments showing an encircling dark line or stripe just back of position of pore; collum with a network of dark lines, the dark color solid at borders; head yellow, with vertex covered by a network of dark lines, a dark band between eyes enclosing a yellow spot adjacent to each antennal socket and a pair of much smaller dots higher up; caudal segment dusky; legs yellow and antennae ducky.

Stipes of male as shown in fig. 18.

Collum margined as usual; lower margin on each side straight or slightly convex; immediately above lower margin one (female) or two (male) longitudinal striae.

Segmental sulcus of the ordinary segments distinct throughout, slightly excurved opposite the pore which is removed from it by about a diameter. Striae of prozonites normal and the usual series of longitudinal striae on metazonites below, the series not extending up above middle on sides.

Cauda of anal tergite straight, acutely pointed and much surpassing the valves. Gonopods as drawn (Figs. 17, 19).

Number of segments, 45. Width of female, 2 mm.; of male, 1.5 mm.

LOCALITY: Mexico: Vera Cruz, Las Vigas. Four specimens taken June 30, 1941, by H. Dybas.

TUNIULUS OREGONENSIS (Wood)

Julius oregonensis Wood, 1864, Proc. Acad. Nat. Sci. Phila., Vol. 15, p. 11.
Codiulus oregonensis Chamberlin, 1940, Bull. Univ. Utah, Biol. Ser., Vol. 5, No. 7, p. 19.

Tuniulus oregonensis Chamberlin, 1941, Bull. Univ. Utah, Vol. 6, No. 4, p. 18.

LOCALITY: Washington: Happy Lake, Olympia Mts. One female taken by "Museum Expedition."

Order SPIROSTREPTIDA

Family PHALLORTHIDAE

Apparently distinguished from the Spirostreptidae sens. str., according to my present interpretation of the gonopods of the male, in having the posterior as well as the anterior legs of the seventh segment modified and functioning as gonopods instead of having the posterior pair missing.

Genus **PHALLORTHUS**, new

Probably a primitive genus in which the posterior gonopods are retained and applied to the caudomesal side of the anterior gonopods. Anterior gonopods retaining three articles which are distally separated.

Generotype: *Phallorthus colombianus*, new species

PHALLORTHUS COLUMBIANUS Chamberlin, new species

Figs. 10, 11

Body brown or dull chestnut, the prozonites in part showing as narrow yellow annuli; anal segment without lighter markings; collum light chestnut, with borders darker; head light chestnut excepting a round dusky or black spot mesodorsad of each antennal socket; legs yellow and antennae brown.

Median sulcus of vertex of head distinct, ending anteriorly in a small depression. Eyes widely separated, the ocelli unpigmented in the type specimen, arranged in three series. Clypeal foveolae 2 + 2. Surface of head smooth and shining throughout.

Collum with anterior margin widely and evenly convex, the caudal margin straight; lateral margin short, a little incurved at middle, with anterolateral corner more widely rounded than the subrectangular or slightly obtuse posterior corner; sulci on each side in the male holotype six on each side, these less sharply impressed and less regular in the female.

Segmental sulcus on the ordinary segments strongly impressed throughout, not bent or excurved at the level of the pore which is contiguous with it. Prozonites with numerous encircling striae. Surface of metazonites appearing smooth and shining, but under good magnification, showing irregular, fine and somewhat wavy lines or striae.

Anal tergite and valves without special furrows or roughening. Anal scale with caudal margin convex over middle portion and concave toward each end.

Sternites and legs of male without special processes; the last two joints of the anterior legs along ventral surface with a series of stout spiniform setae of about the same length as the claw.

Anterior gonopods with terminal division a closely papillose lobe. What is regarded as the posterior gonopod is closely applied to the anterior gonopod on its caudomesal side; each excavated at

its distal end and at caudal border of the excavation bearing a series of long setae and at mesal side a styliform process. (Cf. figs. 10 and 11).

LOCALITY: Colombia: vicinity of Santa Marta and Manzanaris on River Kondo. Male holotype and several females collected Aug. 6, 1902 by H. W. Howland.

Family SPIROSTREPTIDAE

GYMNOSTREPTUS VENTRALIS (Porat)

Spirostreptus ventralis Porat, 1876, Bih. Svensk. Vet. Akad. Handl., Vol. 4, No. 7.

Gymnostreptus ventralis Brolemann, 1902, Ann. Soc. Ent. France, Vol. 71, *Gymnostreptus (Cochliogonus) ventralis* Verhoeff, 1945.

LOCALITY: Brazil: Therezopolis, July 9, 1926, K. P. Schmidt coll.; five miles north of Therezopolis, Nov. 29, 1926, el. 3,000 ft. K. P. Schmidt coll. (Capt. M. Field Brazilian Exped.).

ORTHOPORUS BISULCATUS Chamberlin, new species

Body with alternate rings of chocolate, or black, and yellow, the dark annuli narrowing down the sides and the yellow annuli correspondingly widening; collum entirely black; legs ferruginous.

Vertex of head finely shagreened, the head elsewhere essentially smooth. Ocelli in five series.

Collum on each side with two deep oblique sulci immediately above the margining sulcus; wings bent nearly vertically downward, depressed over middle portion; surface in general smooth.

Ordinary tergites appearing smooth to the naked eye, but under good magnification appearing finely punctate, especially toward the sides; the series of longitudinal striae below on the metatergites continuing up to within a short distance of the pore.

Caudal tergite depressed transversely just in front of the caudal angle; surface finely roughened with punctae. Anal scale broad, the caudal margin with median angle obtuse but well rounded.

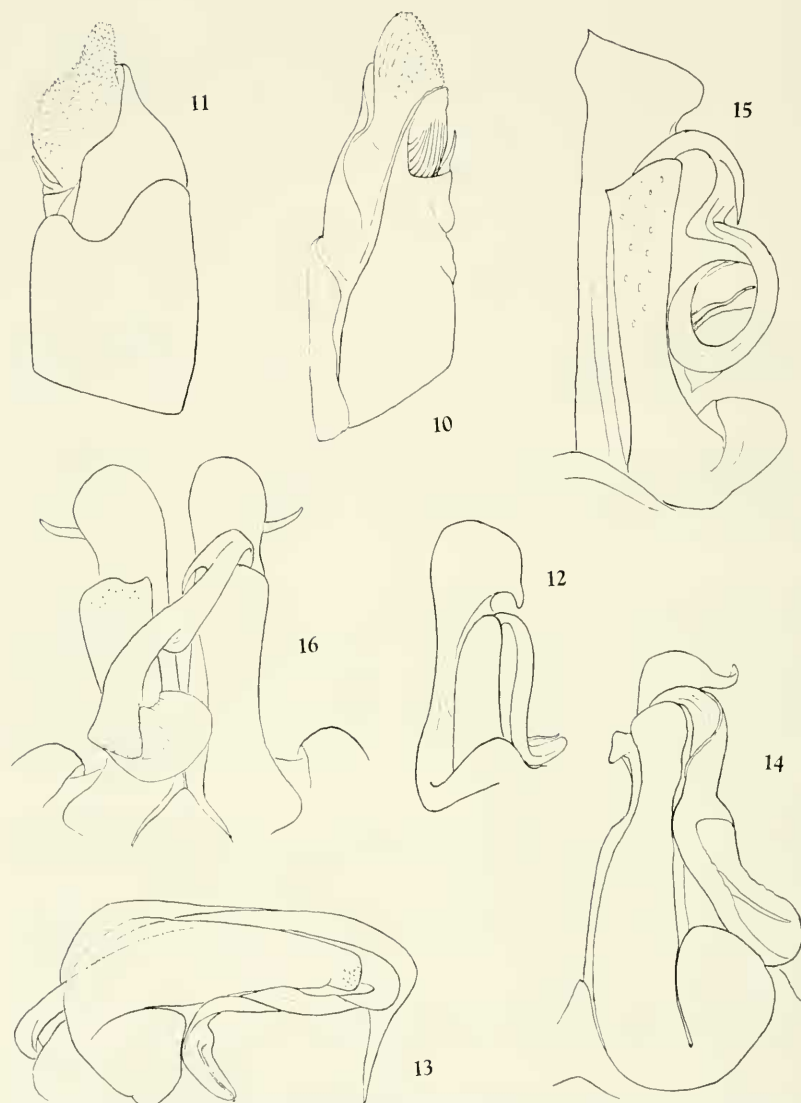
Number of segments, 62.

Width, 4.2 mm.

LOCALITY: Mexico: Vera Cruz, Tejeria. One female taken by H. Dybas, Apr. 19, 1941.

Figures

II



- Fig. 10. *Phallorthus colombianus* n. sp. Right gonopod, caudal aspect.
 Fig. 11. The same. Right gonopod, anterior aspect.
 Fig. 12. *Orthoporus euthus* n. sp. Right gonopod, anterior aspect.
 Fig. 13. *Orthoporus gracilior* n. sp. Right gonopod, anterior aspect.
 Fig. 14. *Orthoporus unciferens* n. sp. Right gonopod, anterior aspect.
 Fig. 15. *Scaphiostreptus simplex* n. sp. Right gonopod, anterior aspect.
 Fig. 16. *Scaphiostreptus dybasi* n. sp. Gonopods, anterior aspect, the telopodite of left one not shown.

ORTHOPORUS BOBOS Chamberlin, new species

In general appearance the body is dark above and much lighter over the sides and venter. The metazonites dark, brownish, in a band behind the sulcus, the caudal border of this band deeper in color and the band fading out down the sides; between this band and the caudal margin a lighter band which usually darkens somewhat down the sides, but the sides as a whole appearing brownish yellow; anal segment light yellow; collum light, with darker borders; vertex of head with a reticulation of dark lines, and below this a triangular dark area with apex downward, deepest in color above and enclosing some paired light spots; the head otherwise yellow. Legs and antennae yellowish or in part of a ferruginous cast.

Eyes separated by nearly twice their transverse length; ocelli in six series. Median sulcus distinct.

Anterior corners of collum well rounded and lower margin of keel conspicuously convex; characterized by having above the lower margin six nearly longitudinal sulci, all of which run forward from the caudal margin and rise but little anteriorly.

On the ordinary segments the sulcus is deeply impressed throughout, widely slightly excurved opposite the pore which is removed from it by not more than one fifth the distance from sulcus to caudal margin. Prozonites with encircling striae as usual. Metazonites densely and rather coarsely puncto-rugose, the series of longitudinal sulci ending below the level of pore.

Elements of the anal segment normal.

Number of segments, 59. Width, 3.2 mm.

LOCALITY: Guatemala: Bobos River, Izabal. One female taken on Dec. 15, 1933, by K. P. Schmidt. (Mandel Expedition).

While represented only by the female, leaving the genus in some doubt, the species should be readily recognized from its small size, coloration, position of repugnatorial pore, sculpturing, and especially the characteristic striation of the collum.

ORTHOPORUS CIENEGONUS Chamberlin, new species

In size and coloration suggesting *C. torreonus*, but the dark annuli are broader, covering the metazonites not only behind the segmental sulcus but embracing a portion of the segment in front of it; the anal valves and tergite black or chocolate colored instead of light brown or golden; legs and antennae black.

Vertex of head densely finely punctate; sulcus as usual. Eyes somewhat less than twice their transverse length apart; ocelli in six moderately curving series.

Collum with anterior corner of wing not produced in the female, rounded; above the lower margin three curving, oblique sulci, with a short one between the lower two in front of the caudal margin.

Segmental sulcus on ordinary segments complete and distinct. Pore more than one third the distance from the sulcus to the caudal margin. Prozonites with the usual striation. Metazonites densely finely punctate with some longitudinal rugae; series of striae below and extending up close to the pore, the upper two or three short.

Anal tergite finely punctate like the other tergites; a transverse, shallow depression in front of the caudal end. Anal scale with margin each side of obtuse median angle a little concave.

Number of segments, 69. Width, 9 mm.

LOCALITY: Mexico: Cienego de Flores. Two females taken by H. Dybas, June 14, 1941.

ORTHOPORUS COBANUS Chamberlin

Orthoporus cabanus Chamberlin, 1922, Proc. U.S. Nat. Mus., Vol. 60, art. 8, No. 2403, p. 16.

LOCALITY: Coban. Several males and females, Mar. 18, 1934, taken by K. P. Schmidt. This is the type locality.

ORTHOPORUS CROTONUS Chamberlin, new species

A strongly banded form in which the annuli back of the sulci are chestnut to chocolate in color, a narrow band just in front of each of these of a lighter brown color and the anterior portion yellow; anal segments chocolate colored; head chocolate excepting the lighter, more reddish, clypeal area; collum chocolate colored, without lighter markings; legs and antennae chocolate colored to nearly black.

Collum with anterior corners not at all produced, obtuse; above the lateral margin three deep sulci which run first nearly horizontally and parallel with the lower margin, then bend at an angle obliquely upward and forward, with a shorter minor sulcus above and typically one below these major sulci.

On the ordinary segments the sulcus is deeply impressed throughout and is obtusely angled opposite the pore which is only about its diameter from the sulcus. The longitudinal sulci below on metazonites strongly marked, the series on middle and posterior segments failing to reach level of pore by a wide distance. Striation of prozonites normal.

Anal tergite slightly ridged along the middle, with no transverse depression or sulcus; surface finely punctate like the other tergites.

Anal scale with margin each side of angle a little concave as usual.

Number of segments, 72. Width, 10 mm.

LOCALITY: Texas: Croton Springs, north of Chisos Mts., Brewster Co. Two females taken by K. P. Schmidt, July 24, 1937.

ORTHOPORUS EUTHUS Chamberlin, new species

Fig. 12

The body conspicuously ringed with narrow reddish annuli, one about caudal border of each segment, the segments otherwise bluish grey, the amount of blue variable. Legs ferruginous.

Median sulcus of head ending anteriorly at a dusky band between eyes. Inner angles of eyes acute; ocelli in five transverse series; eyes separated by twice their diameter. Clypeal foveolae 2 + 2.

Collum with anterior margin nearly straight across its middle, bent back at level of eye in a rounded obtuse angle and then running nearly straight to the subrectangular anterior corner; posterior corner well rounded off; a sharply impressed sulcus beginning at caudal margin a little mesad of the lateral corner and running obliquely toward eye, with three sulci between this and the margining sulcus; surface otherwise smooth and shining.

Other tergites in general very finely coriaceously roughened. Segmental sulcus not at all, or, in the female, slightly widely ex-curved at level of pore which is well removed from it; sulcus beaded throughout by short, close-set, cross striae.

Anal scutum with surface densely finely punctate or coriaceous. Anal scale with caudal margin slightly obtusely angled at middle.

Anterior legs in male with ventral pads on penult and antepenult joints.

Gonopods characterized by having inner lamina produced at ectocaudal corner of the distally expanded portion into a short, blunt, retrose cone. See further fig. 12.

Number of segments, 61-63. Width of male, 3.2 mm.; of female, 4.2 mm.

LOCALITYS Guatemala: Tiquisate, Esquintla. A male and female taken by K. P. Schmidt, Jan. 1, 1904. (Mandel Expedition).

ORTHOPORUS GRACILIOR Chamberlin, new species

Fig. 13

General color cinereous to yellowish; strongly annulate with dark bands which are deeper in color dorsally than laterally, this

dark annulus following the segmental sulcus; anal segment light, in part ferruginous; legs and antennae ferruginous.

Clypeal foveolae 3 + 3. Vertex of head smooth and shining, the sulcus fine and rather weak. Eyes twice or more their greatest diameter apart, comparatively small, the ocelli forming but three longitudinal series.

Collum bowed strongly forward between the very obtuse anterior corners in front of which widely convex, but the median portion nearly straight; two deep, oblique sulci above the margining sulcus on each side; surface smooth and shining.

Segmental sulcus on other tergites sharply impressed throughout. Covered portion of prozonites with encircling striae few but distant. Metazonites densely finely punctate or coriaceous and the exposed part of prozonite somewhat more finely marked. Series of longitudinal sulci on metazonites not reaching up to the pore.

Caudal tergite finely punctate like the other tergites. Anal scale with caudal margin straight.

Gonopods with ectal cone long, slender and straight and nearly transverse; lateral lamina scabrous in an area near the end. See further fig. 13.

Number of segments, 77. Width, 3.2 mm.

LOCALITY: Guatemala: Volcan Tajumulco. A male and female taken at an elevation of 4,000 to 6,500 ft. by K. P. Schmidt on Feb. 21, 1934. (Leon Mandel Expedition).

ORTHOPORUS **TEHUACANUS** Chamberlin, new species

In this species the metazonites are mostly blue or bluish black with caudal borders of segments ferruginous and the prozonites yellow or orange; head dark above, somewhat chestnut below; anal segment black; legs ferruginous and antennae a darker chestnut.

Eyes subpyriform in outline, being broad across ectal end and narrowing mesad; ocelli in 8 or 9 transverse and moderately curved series. Vertigial sulcus only faintly indicated. Clypeal setae 2 + 2.

Anterior corners of collum obtuse, narrowly rounded; lateral margin a little incurved; on each side above the margining sulcus four deep sulci which are oblique, the uppermost of these beginning at posterior corner and curving obliquely forward and upward.

Segmental sulcus on other segments deeply impressed throughout, widely but only moderately excurved or obtusely angled opposite the pore which is located more than one third the distance from sul-

cus to caudal margin. Prozonites with the usual encircling striae. Metazonites with the usual series of longitudinal striae below and the series continued with shorter striae entirely across the dorsum; surface of metazonites densely puncto-rugose.

Elements of the segment normal.

Number of segments, 73. Diameter, 5 mm.

LOCALITY: Mexico: Puebla, Tehuacan. One female taken by H. Dybas at El. 5,500 ft. on July 6, 1941.

ORTHOPORUS UNCIFERENS Chamberlin, new species

Fig. 14

Dark brown, in part nearly black, with rings of light brown or yellowish which widen down the sides; legs ferruginous.

Clypeal foveolae 2 + 2. Head smooth above clypeus up to level of antennae; vertex with the usual median sulcus but no interocular culcus, its surface finely densely punctate or coriarius. Ocelli in 5 slightly curved rows.

Collum with anterior lateral corners obtuse, with apex truncate; on each side above the margining sulcus four long, oblique sulci; surface very finely and closely punctate.

Surface of ordinary tergites finely puncto-rugose. The striae as usual.

Anal tergite densely finely punctate, without rugae. Anal scale with caudal margin forming a wide, obtuse angle.

Ectal cone of inner lamina of gonopods curved conspicuously caudad; on mesal margin proximad of level of distal end of outer lamina a conspicuous truncate process. Distal expansion of telopodite beginning above middle of its free portion, the expanded only somewhat boat-shaped. See further fig. 14.

Number of segments, 63. Width, 4mm.

LOCALITY: Guatemala: El Provenir. San Marcos. One male taken by K. P. Schmidt, Mar. 5, 1934.

SCAPHIOSTREPTUS SIMPLEX Chamberlin, new species

Fig. 15

Body conspicuously ringed with narrow reddish or chestnut annuli about the caudal borders of the segments; in front of each of these annuli a narrow annulus of yellowish color, the broader remaining portion of the segment olivaceous. Legs and antennae light, somewhat ferruginous brown.

Clypeal foveolae 2 + 2. Above the clypeal setae the face is

glabrous and is marked with sparse and very fine punctae but is otherwise smooth and shining. A fine but distinct sulcus between inner angles of eyes. Eyes separated by somewhat more than their transverse diameter.

Collum with anterior margin straight across its middle, laterally moderately concave mesad of each anterior corner, the latter subrectangular; posterior corner rounded off; on each side above the margining sulcus 4 or 5 principal sulci.

On the ordinary segments the prozonites have the usual striation. Metazonites smooth and shining, the series of longitudinal striae extending upward close to the pore.

Anal tergite smooth. Anal scale very wide, slightly obtusely angled at middle.

Gonopods without lateral cones, the lateral margin simply rounded. Lateral margin without a dark claw-like process at end, its distal margin with a series of short, coarse setae or spinose. A femoral spine present, this straight, acute and of moderate size. Geniculate distad of femoral spine, beyond this bend curving into a circle, with an expanded terminal lamina and a slender seminal stylus. See further fig. 15.

Number of segments. 58.

Length, about 100 mm.; width, 6.8 mm.

LOCALITY: Venezuela: probably near Caracas. One male. H. Irene coll., May 3.

SCAPHIOSTREPTUS TEXICOLENS (Chamberlin)

Orthoporus texicolens Chamberlin, 1938, Proc. Biol. Soc. Wash., Vol. 51, p. 207.

LOCALITY: Texas: Brownsville. One male taken by A. C. Weed, Sept. 8, 1923.

SCAPHIOSTREPTUS **DYBASI** Chamberlin, new species

Body bluish black, annulate with sharply defined bands of chestnut color, the annuli duller and less clearly defined when animal is dry; head dark over the vertex, becoming lighter down the front, with clypeal region and the antennae chestnut; collum narrowly bordered with chestnut; anal segment black or nearly so. Legs ferruginous.

Head smooth and shining. Vertigial sulcus distinct, ending in a depression at level of antennae. Eyes separated by their transverse length or but little more; ocelli in 5 or 6 series, the sixth or lowermost series embracing but 1 or 2 ocelli.

Keels of collum with two longitudinal oblique and deep sulci on each side above lower end; surface smooth.

On the following segments the prozonites lack any distinct encircling striae. Metazonites minutely punctate above; the lateral series of longitudinal striae not reaching to pore. Segmental sulcus distinct throughout, not excurved at level of pore which is separated from it by less than a diameter.

Anal tergite normal. Anal scale broadly triangular with the obtuse caudal angle rounded

In the male, pads project distad from penult and antepenult joints of legs.

Gonopods in situ with the telopodites crossing each other at the middle line in front of the coxite. For details of structure see fig. 16.

Number of segments, 67. Width, 5.4 mm.

LOCALITY: Mexico: Vera Cruz, El Fortin. One male taken at 3,000 ft. by H. Dybas, July 10, 1941.

SPIROSTREPTUS (?) *ERGUS* Chamberlin, new species

Entire body with legs and antennae black, without annuli or other markings.

Vertigial sulcus extending across vertex to a fine, nearly obsolete line between eyes. Eyes large, with ocelli in six series, the eyes separated by somewhat less than their transverse diameter.

Wings of collum with anterior corners produced forward, the corner in outline moderately acutely rounded at apex. Above lower margin three principal oblique sulci and a shorter one between the upper two of these. Surface of collum smooth.

Segmental sulcus very fine but distinct throughout on the following segments. The pore widely separated from the sulcus, being about one third the distance from the latter to the caudal margin. Surface of segments appearing smooth and shining but under good magnification seen to be densely punctate, the punctae fine. Prozonites with the usual encircling striae. Metazonites with longitudinal striae only below.

Anal tergite with surface as on other tergites. Anal scale broadly triangular, the median angle obtuse and the margin each side convex.

Number of segments, 64. Width, 9.2 mm.

LOCALITY: Venezuela: probably near Caracas. One female taken by Hermano Irene.

Order CAMBALIDA

Family CAMBALIDAE

CAMBALA ANNULATA (Say)

Julus annulata Say, 1821, Journ. Acad. Nat. Sci. Phila., Vol. 2, p. 103.
Julus annulata Say, 1821, Journ. Acad. Nat. Sci. Phila., Vol. 2, p. 103.
Cambala annulata Gray, 1832, in Griffith, "Cuvier's Animal Kingdom,"
Vol. 15, pl. 135.

LOCALITY: North Carolina: Asheville. A male and female taken Jan. 8, 1933, by Edw. Brundage, Jr.

CAMBALA SALTILLONA Chamberlin

Cambala saltillona Chamberlin, 1943, Bull. Univ. Utah, Biol. Ser., Vol. 8, No. 2, p. 3, figs. i, 2.

LOCALITY: Saltillo, Stephens Co., Texas. A male and female taken by K. P. Schmidt. (Types of the species).

Family LEIODERIDAE

LEIODERE ANGELORUM Chamberlin

Leiodere angelorum Chamberlin, 1943, Bull. Univ. Utah, Biol. Ser., Vol. 8, No. 2, p. 5, fig. 5.

LOCALITY: Los Angeles, California, June 5, 1936. Two females taken by G. Grant.

Order COLOBOGNATHA

Family ANDROGNATHIDAE

BRACHYCYBE LECONTEI Wood

Brachycybe lecontei Wood, 1864, Proc. Acad. Sci. Phila., p. 187.

LOCALITY: Tennessee, Great Smoky Mts. Nat. Park, several taken by Dr. Charles H. Seeversam, June 10, 1940; same park at Greenbriar Cove, many specimens taken by H. Dybas, June 14-19, 1942.

Family PLATYDESMIDAE

PLATYDESMUS CALUS Chamberlin, new species

With a strongly marked and distinctive color pattern. General color of dorsum, yellow; 5 pairs of longitudinal black stripes in sequence from head caudad, each pair beginning near middle line and diverging caudad so as to leave a narrowly sagittate yellow area between them, there being thus six of these sagittate areas, the point of each contacting the base of the preceding one. On the base of each contacting the base of the preceding one. On the base of each keel a black area enclosing at mesal end a large yellow spot and running out on keel to a narrowly acute point. Upper part of head black, enclosing a pair of yellow spots between bases of antennae. Venter and legs yellow.

Eyes present.

Collum notched at middle of anterior border nearly as in *crucis* but the margin each side of the notch straighter and more nearly strictly transverse. Anal tergite surpassed by the keels of the preceding tergite.

On the ordinary tergites the tubercles are much fewer than in *crucis*; in both rows the tubercles decrease in size ectad and neither series extends to the keels.

Sternites very wide, wider proportionately to the legs than in *crucis*.

Number of segments, 43.

Length, 13 mm.; width, 3.8-4 mm.

LOCALITY: Mexico: Vera Cruz Penuela. July 15, 1941, two specimens taken by H. Dybas. Also Vera Cruz at El Fortín, two specimens taken Aug. 8, 1941, by H. Dybas.

Distinct from other known species in color pattern and proportions of body.

PLATYDESMUS CRUCIS Chamberlin, new species

Fig. 1

Dorsum brown, a lighter area or series of lighter spots over base of keels and adjacent part of dorsum; keels lighter at tips. Venter and legs yellow.

One pair of eyes present.

Collum angularly excised at middle, not widely emarginate as in *mexicanus*, etc., the incision not narrow and deep as in, e.g., *perpictus*. (See fig. 1.)

Tubercles on the ordinary segments strongly developed, the anterior series extending out on the keels to their ends. Tubercles of posterior row reduced in size toward ends and not extending onto keels.

Last tergite narrow, narrowing posteriorly and much surpassed by the keels of the preceding segment.

Sternites broad, twice or more as wide as the first joint of legs.

Number of segments, 47-49.

Length, 16 mm.; width, 3.2 mm.

LOCALITY: Mexico: Vera Cruz, Las Vigas. Ten specimens taken by H. Dybas on June 30, 1941.

PLATYDESMUS EXCISUS Chamberlin, new species

Fig. 2

Specimens in full color are brown, with a median longitudinal band darker blackish, which is geminate by a fine median line; on

III

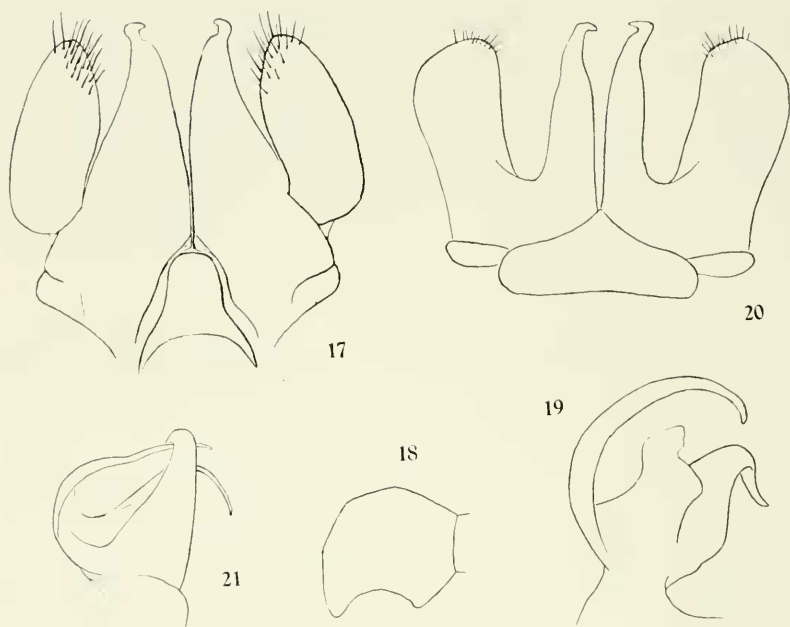


Fig. 17. *Paraiulus viganus* n. sp. Anterior gonopods, cephalic aspect.

Fig. 18. The same. Stipes of mandible of male in outline.

Fig. 19. The same. Right posterior gonopod, submesal aspect., on longer scale than fig. 17.

Fig. 20. *Paraiulus schmidtii* n. sp. Anterior gonopods, cephalic aspect.

Fig. 21. The same. Right posterior gonopod, caudal aspect.

each side a series of yellow spots on the prozonites; in some specimens a lighter mottled area on bases of keels and adjacent part of tergites. Venter and legs yellow.

One pair of eyes present.

Collum excised in a widely obtuse re-entrant angle, this leaving the head partly exposed in dorsal view. (See fig. 2.)

On the following tergites the two rows of tubercles are strongly developed, with both series extending out to, or nearly to, ends of keels where also there may be a few non-seriate, smaller tubercles or granules.

Anal tergite broad, moderately narrowed caudad, its caudal processes with tips about on a level with caudal margin of keels of the preceding segment.

Number of segments, 42.

Length, 18 mm.; width, 3 mm.

LOCALITIES: Guatemala, Sierra Santa Elena, Jan. 26 and Feb. 9, 1934, about 25 specimens; also near Tecpan, Jan. 20, 1934, five specimens, all collected by K. P. Schmidt. (Leon Mandel Expedition).

PLATYDESMUS **PERDITUS** Chamberlin, new species

Fig. 3

In color pattern resembling *P. calus* but differing in details.

Differing from the other species here described in its much broader form. There is a series of median dorsal sagittate areas of yellow color as in *calus*, these areas similarly enclosed in black and typically 5 in number instead of 6, each apically more slender. The outer part of tergites and base of keels brown or blackish, with enclosed yellow or mottled areas, the brown color, in more dilute state, continuing on outer part of keels where there is also a mottling of lighter spots, thus lacking the sharply defined, externally pointed, black mark on basal part of keel characterizing *calus*. Venter and legs yellow excepting that in the type there are four widely separated black areas on the mid-venter, each area embracing three or four sternites. Head black above, with the usual pair of pale spots; brown below, this area enclosing a transverse series of four light spots.

Eyes present.

The collum completely concealing the head from above; with a median longitudinal furrow that ends anteriorly in a small narrow notch or slit. (See fig. 3.)

LOCALITY: Guatemala.

PLATYDESMUS **PERPICTUS** Pocock

Platydesmus perpictus Pocock, 1910, Biol. Centr.-Amer., Diplopoda, p. 47, pl. 4, figs. 1, 1a-j.

LOCALITY: Guatemala: Chichivac, near Tecpan. Four specimens taken Feb. 1, 1934, by K. P. Schmidt. (Mandel Expedition).

PLATYDESMUS **TRIANGULIFER** Pocock

Platydesmus triangulifer Pocock, 1910, Biol. Centr.-Amer., Diplopoda, p. 45, pl. 4, figs. 4, 4a-e.

LOCALITY: Guatemala: Escobas, Izabal, Dec. 4, 1933. One female with her numerous young and many other adults taken at El. 400 ft. on Dec. 4, 1933 by K. P. Schmidt who notes: "100 or more in an aggregate on a rotter liana, some three deep."

Family SIPHONOPHORIDAE

SIPHONOPHORA **GLOBICEPS** Pocock

Siphonophora globiceps Pocock, 1910, Biol. Centr.-Amer., Diplopods, p. 52, pl. 5, figs. 6, 6a.

LOCALITY: Guatemala: Chichivac. One taken Feb. 4-7, 1934, by K. P. Schmidt.

SIPHONOPHORA CONICORNIS Chamberlin, new species

Color yellow.

Beak longer than the head but shorter than the antennae.

Collum deeply angularly excised anteriorly.

Characterized especially by the form of the antennae which are widest at the third article from where subconically narrowed to the end.

The large number of segments, 129, also separates this species from, e.g., *S. barberi*, another Guatemalan species in which there are from 68 to 82 segments.

Length, about 50 mm.

LOCALITY: Guatemala: Escobas, Izabal. El. 400 ft. One female taken Dec. 4, 1943, by K. P. Schmidt.

SIPHONOPHORA FALLENS ANNECTA Chamberlin, new subspecies

This form seems to differ from the types of *fallens* in having the anterior border of the collum acutely notched at the middle instead of being merely widely a little concave. It is a somewhat longer form (20 mm. as against 15 mm.) with segments 73 instead of 55-60.

LOCALITY: Guatemala: Volcan Tajumulco. One female taken by K. P. Schmidt on Feb. 13, 1934.

SIPHONOPHORA VERA Chamberlin, new species

The dorsum of the preserved type without special markings, the sides and venter more yellowish. Legs yellow.

Head very narrow, widest at base, longer than the beak. Antennae clavate, the heavy sixth article more than half the width of the head at base, surpassing the beak which reaches but little beyond the base of the sixth article.

Collum much wider behind than in front, its anterior margin widely incurved.

Posterior gonopods having terminal joint with a narrowly conical base above which attenuated into the usual slender style. Anterior gonopods with last joint longest as usual, and above its conical base also narrowed into a slender style.

Number of segments, 90 to 102.

LOCALITY: Mexico: Vera Cruz, Las Vigas. About 18 specimens taken in 1, 1941 by H. Dybas, at El. 5,500 ft.